

CLAIMS:

1. A radio frequency (RF) linear power amplifier (200) operating in an output frequency band, having an output transistor (Q2), said power amplifier comprising:
 - (a) a circuit means (300') for generating a bias signal producing a quiescent current flowing through said output transistor (Q2) of said RF power amplifier;
 - (b) a detector circuit means (210) for detecting RF input to said amplifier and generating a driving signal (215) according to a power level of said RF input;
 - (c) a self-adapting circuit means (250) for receiving said driving signal (215) and automatically modifying said bias signal and said quiescent current through said output transistor (Q2), whereby said quiescent current at said output stage is reduced and optimized for minimum dissipation and optimal linearity at all power output levels.
2. The linear power amplifier as claimed in Claim 1, wherein the self-adapting circuit means (250) automatically modifies said quiescent current for an output stage amplifier by tracking said detected RF signal being input to the amplifier at power ranges above a certain power output threshold.
3. The linear power amplifier as claimed in Claim 2, wherein the detector circuit means (210) for generating said driving signal (215) is connected to said self adapting circuit means (250), said self adapting circuit means further including means (211, 212) for filtering out any RF component of said driving signal (215).
4. The linear power amplifier as claimed in Claim 2, wherein the self adapting circuit means (250) includes means (225, 228) for automatically reducing the quiescent current for an output stage amplifier from one state of lower quiescent current to another state of higher quiescent current.
5. The linear power amplifier as claimed in Claim 1, comprising first and second power output stages, wherein said detector circuit means (210) detects RF input to said amplifier at said first output stage (Q1), for reducing said quiescent current at a second output stage (Q2).

6. The linear power amplifier as claimed in Claim 1, further comprising means (125, 126) for further modifying said quiescent current at a second output stage under discrete voltage control.

7. A device including a radio frequency (RF) linear power amplifier operating in an output frequency band, having an output transistor, said power amplifier comprising:

(a) a circuit means (300') for generating a bias signal producing a quiescent current flowing through said output transistor (Q2) of said RF power amplifier;

(b) a detector circuit means (210) for detecting RF input to said amplifier and generating a driving signal (215) according to a power level of said RF input;

(c) a self-adapting circuit means (250) for receiving said driving signal (215) and automatically modifying said bias signal and said quiescent current through said output transistor (Q2), whereby said quiescent current at said output stage is reduced and optimized for minimum dissipation and optimal linearity at all power output levels.

8. The device as claimed in Claim 7, wherein the self-adapting circuit means (210) automatically modifies said quiescent current for an output stage amplifier by tracking said detected RF signal being input to the amplifier at power ranges above a certain power output threshold.

9. The device as claimed in Claim 7, wherein the detector circuit means (210) for generating said driving signal (215) is connected to said self adapting circuit means, said self adapting circuit further including means (211, 212) for filtering out any RF component of said driving signal.

10. The device as claimed in Claim 7, wherein the self adapting circuit means includes means (225, 228) for automatically reducing the quiescent current for an output stage amplifier from one state of lower quiescent current to another state of higher quiescent current.

11. The device as claimed in Claim 7, comprising first and second power output stages, wherein said detector circuit means (210) detects RF input to said amplifier

at said first output stage (Q1), for reducing said quiescent current at a second output stage (Q2).

12. The device as claimed in Claim 7, further comprising means (125, 126) for further modifying said quiescent current at a second output stage under discrete voltage control.

13. A self-adapting circuit (250) for dynamically controlling quiescent current flowing through said output transistor of a linear power amplifier operating in an output frequency band, having an output transistor, said linear power amplifier comprising a circuit means (300') for generating a bias signal producing a quiescent current flowing through said output transistor of said RF power amplifier, said self-adapting bias circuit comprising:

a) a detector circuit means (210) for detecting RF input to said amplifier and generating a driving signal (215) according to a power level of said RF input;

b) means (225, 228) for receiving said driving signal and automatically modifying said bias signal and said quiescent current through said output transistor, whereby said quiescent current at said output stage is reduced and optimized for minimum dissipation and optimal linearity at all power output levels.

14. The self-adapting circuit as claimed in Claim 13, wherein the modifying means (225, 228) automatically modifies said quiescent current for an output stage amplifier to track said detected RF signal being input to the amplifier at power ranges above a certain power output threshold.

15. The self-adapting circuit as claimed in Claim 13, wherein the detector circuit means (210) for generating said driving signal (215) is connected to said modifying means (225), said detector circuit means (210) further including means (211, 212) for filtering out any RF component of said driving signal.

16. The self-adapting circuit as claimed in Claim 13, wherein said circuit means for generating a bias signal producing a quiescent current comprises a differential transistor pair (325), said modifying means is connected to one side of said differential pair

for automatically modifying said quiescent current for an output stage amplifier according to said detected RF signal input.

17. The self-adapting circuit as claimed in Claim 13, wherein said linear power amplifier comprises first (Q1) and second (Q2) power output stages, wherein said detector circuit means detects RF input to said amplifier at said first output stage, for reducing said quiescent current at a second output stage (Q2).

18. The self-adapting circuit as claimed in Claim 13, wherein said second power output stage further includes means (125, 126) for further modifying said quiescent current at a second output stage under discrete voltage control.